GLOBALIZATION & TRAINING: TOOLS & METHODOLOGIES

ALEV M. EFENDIOGLU, Ph.D. AND L. W. MURRAY, Ph.D.
School of Business and Management, University of San Francisco

Abstract: *The technological changes of the past two decades have brought about significant and profound changes in our society and economy. Technology, specifically telecommunications technology, has created environments and delivery systems that have accelerated globalization with increased offshoring of business processes and 24/7 business operations. However, increased globalization has often resulted in local labor shortages, especially in countries which have been the major recipients of globalized business processes. These changes have also created opportunities and challenges for organizational trainers, as they extend their training efforts, unburdened by time, location, or knowledge source. This paper reviews and discusses some of the educational/training methodologies and approaches that can be used to minimize the impact of this increasingly important limitation, shortage of skilled labor in developing countries. It also presents some challenges faced by organizations as they increase and expand their e-training efforts.*

Keywords: *Globalization, Tarining, Methodologies, Tools*

INTRODUCTION

The technological changes of the past two decades have brought about significant and profound changes in our society, economy, and educational systems. Technology, specifically telecommunication technology, has created environments and delivery systems that have spawned e-commerce and virtual retail outlets, increased globalization with offshoring and 24/7 business operations, and distributed education that is unburdened by time, location, or knowledge source.

However, these efforts to further globalize and to employ labor and skills in developing countries have created conditions where availability of educated employees has been significantly strained, putting increased demands on the existing skill sets of the local population. An excellent example of this is the situation in China. In 2003 China had roughly 8.5 million young professional graduates with up to seven years' work experience and an additional 97 million people that would qualify for support-staff positions. Despite this apparently vast supply, multinational companies are finding that few graduates have the necessary skills for service occupations. According to interviews with 83 human-resources professionals involved with hiring local graduates in low-wage countries, fewer than 10 percent of Chinese job candidates, on average, are suitable for work in a foreign company in the nine occupations studied: engineers, finance workers, accountants, quantitative analysts, generalists, life science researchers, doctors, nurses, and support staff. Effective managers are in short supply as well. It is estimated that, given the global aspirations of many Chinese companies, over the next 10 to 15 years they will need 75,000 leaders who can work effectively in global environments; today they only have 3,000 to 5,000 who can fill these positions. To compound this lack of available skilled labor, Chinese graduates lack mobility and only one-third of all Chinese graduates move to other provinces for work. (Farrell and Grant, 2005) Many companies have compensated for these shortages by penetrating deeper into China's vast heartland. However, with investment growing in the interior, labor shortages are popping up in those areas as well. As a result, during 2005, wages in China increased an average of 10% in already high-pay major cities and population centers and up to 40% in some of the inland areas.

Some U.S. companies believe better education and training as the way to maintain their relative position and have made investments to educate and train local potential employees. Among these companies are Motorola, which hires graduates straight from school and the trains them at its "Motorola University" in Beijing, and Intel Corp. which has backed initiatives that have trained 600,000 teachers. (Roberts, 2006) According to McKinsey Global Institute, to compensate for the poor education systems in developing countries, companies invest heavily in training programs, which can add 15% to personnel costs. (Sovich, 2006)

These labor shortages not only fuel significant increases in wages (decreasing the cost advantages associated with the offshoring), they also cause major labor turnover, resulting in increased need to train new hires on an ongoing basis, and impede organizational growth. Once again, the case of China demonstrates this point fully. According to the Institute of Contemporary Observation, a labor research group in Shenzhen, turnover in some low-tech industries approaches 50%. Many jobs (an estimated 2.5 million jobs in Guangdong Province) remain unfilled, making finding and keeping good workers the No. 1 challenge in most populated provinces of China.

Similar labor shortages and resulting cost increases can be seen in other countries which have been the major beneficiaries of offshoring/outsourcing by the developed countries and economies. For example, according to the latest statistics from the Indian government Indian software firms saw their payroll costs increase 35.1% during 2005.

The changes and developments in the economic environments and advances in technology, during the last decade, have created opportunities for the educational institutions and training providers, and have enabled them to extend their products (e.g. course offerings, degree granting authority, occupational training, professional recertification, etc.) using a multitude number of ways, using different delivery systems, giving way to the concepts of "distance education and training at a distance" and bringing educational systems and technologies to where the potential student populations are.

In delivering the many distance education programs, both local and international, the educators and educational institutions have used different methodologies and pedagogies, and have relied on different technologies, from video- or audio-taped to Internet-based, including the recent usage of "podcasting" (one of the latest educational technologies that are being used by instructors to meet on-demand learning needs of connected learners in an information centric world), which involves integration of text, audio and video delivered via a MP3 player or desktop computer. Some companies have even developed and use "video-game" format for on-the-job training programs.

Many of the lessons learned over the last two decades of distance education research and practice have been implemented in a wide variety of distance education and training programs worldwide, from higher education online learning programs in the United States to rural, radio-based training programs in developing countries. However, because of the availability of constantly changing and evolving delivery technologies and the different educational methodologies utilized, there have been ongoing research efforts to evaluate these technologies and teaching methodologies to develop systems that enhance the educational products. The primary focus of most of these research efforts has been to understand the impact of these technologies and methodologies on the core objective of "teaching effectiveness". This objective has been evaluated by trying to answer such questions as: how do we utilize technology? How do we combine it with teaching methodologies to enhance knowledge and skill development? How do we make education and training available to a broader spectrum of society, regardless of their time and geographical boundaries?   What is the role of faculty or tutor? How important is the human experience, students' physical interaction (face-to-face) with faculty or trainers?

Some of the answers to questions above are provided by the recent meta-studies of distance education which conclude that *distance education delivery is both cost-effective and is superior to face-to-face instruction*, when controlling for several important intervening variables, identified as "*the method of instructions vs. the preferred learning methods of the trainees*", and the *level and amount of student interaction*.. Further, such studies conclude that when organized, systematic student discussions are employed the benefits are substantially enhanced.

The method of instruction vs. the preferred learning method for the trainees is addressed by Kolb (1981) in his "theory of experiential learning". As part of his theory, he identifies, defines, and discusses the concept of learning modes, and argues that different individuals prefer and are more successful when their preferred learning mode is used in the teaching methodology and the process.

In testing the effectiveness of the various learning modes employed in MBA courses, Mainemelis, Boyatzis, and Kolb (2002) suggest that, if online learning stresses one learning mode over another, the results

would undermine the learning opportunities of the students who profess strong preferences for other learning modes. To illustrate the importance of this variable, Chen and Shaw (2004) reported on an experiment in which they split a group of students into three groups and delivered software training to groups of students that were trained face-to-face, using synchronous online instruction, and a third group using asynchronous online instruction. The training employed behavior modeling (i.e., teaching through demonstration). Although they concluded that there was no real difference in the effectiveness of either of the three methods of delivery, they noted that the common cultural backgrounds of the Taiwanese computer science students used in this experience and the preferences of computer science teachers and trainers for demonstration and hands-on experience might make the findings biased towards one of the learning modes – action and reflection.

Additional studies have addressed the second intervening variable, existence or lack of student interaction during the training. The findings of these studies clearly demonstrate that, student performance is greatly enhanced when students are able to discuss what they are learning. Methods that permit such discussions have been developed and employed in both synchronous and asynchronous online delivery systems and the results of numerous research studies on the effectiveness of such systems support this important conclusion. (Tiernan and Grudin, 2000; Sipusic, *et. al*, 1999; Cadiz, *et. al*., 2000; Fortino and Nigro, 2004; and Rovai, 2002) Furthermore, the findings of the Murray and Efendioglu's (2002) study--the impact of increased human contact with course faculty on student learning and satisfaction--show the value and importance of human interaction in distance education. These findings are also supported by a much recent study by Biggs (2006).

Given that the effectiveness of distance education has been demonstrated, both on the cost and skill development side, can global businesses use similar techniques, technologies, and methodologies to train potential local employees and address and minimize the impact of skilled labor shortages in developing countries? To provide further answers to these questions, we will examine the ongoing research on the effectiveness of technology based, tutored instruction, and expand the discussion by looking at research findings which have studied the

impact of different types of discussants, who are utilized in technology based distance education.

DISTANCE EDUCATION DELIVERY SYSTEMS

Distance education and training experiences differ from all other experiences designed for the same purpose in three ways. First, the students are not "live"; they are not physically present with the teacher/trainer. Second, they may or may not be physically present with other students in the same course. Third, they may or may not be experiencing the education/training at the same time. Early examples of such experiences include education/training by mail, fax, and/or by Internet, live lectures shown simultaneously in other locations via TV, video-conferencing, audio-conferencing, and distributed video- or audio-conferencing. Given the purposes of this paper, we would like to focus on such experiences that have been developed more recently and whose efficiency and effectiveness have been found to be superior to earlier versions.

We will begin with an updated example of video-conferencing. In their baseline study, Gibbons, *et. al.*, (1977) described a method for delivering education from a distance that involved students watching videotaped lectures as a group, followed by structured discussions led by a tutor: Tutored Video Instruction (TVI). These tutors were trained in leading discussions and were charged with stopping the videotape when student questions arose or when students wanted to interject their thoughts or opinions. Student satisfaction was found to be high and their grades were higher than those of the students enrolled in the live classes that were videotaped. Further, this study concluded that compared to other forms of distance and "live" education it was very cost-effectiveness.

Many researchers who have studied TVI as an education delivery technology and methodology have concluded that "tutor" is the key value-adding factor of this educational delivery system. Through the tutor the students were able to ask questions and receive information, making the tutor the major link between the students and the instructor. Further, the tutor encouraged the formation of a "community" amongst the students. In addition to Gibbons, *et. al.*, (1977), the findings of Kiser (1999), Cadiz, *et. al.* (2000), and Murray and Efendioglu (2002) support

the impact and the undeniable value of the existence of a "tutor", when using this delivery system. Kiser (1999) demonstrated the dramatic importance of the tutor on one aspect of student performance: completion rate (for the same course the completion rate was 75% with tutor vs. 25% without one) and Cadiz, *et. al.*, (2000) found that the use of a designated "discussion leader" improved the effectiveness of audio- and video-based instruction, and in text-chat alternatives. In an attempt to understand the impact of technology and on-site vs. off-site student experiences, Rovai (2002) concludes that "there appears to be no significant difference in classroom community experiences" between live classroom and students enrolled in distance education. The study by Murray and Efendioglu (2002) has also come to similar conclusions.

Other distance education delivery systems have incorporated technology further and have attempted to enhance the system and positively influence its outcomes. One of such systems was developed and used by Sun Microsystems and is called Distributed Tutored Video Instruction (DVTI). The primary objective of this system was to improve the learning effectiveness and experiences by substituting technology to emulate a "face-to-face" connection. This system uses both microphones (used for talking and hearing at the same time) and a real-time video which enables each participant to see each other. There is a tutor who controls the VCR playing the course video and students can request the video to be paused any time, add their comment or question either by typing or speaking. The student's interjection is linked to the videotape; subsequent viewers are therefore able to watch the video and learn from other students' contributions. (Sipusic, et. al., 1997) The effectiveness of this methodology was researched and reported on by Tiernan and Grudin (2000) and Guzley and Bor (2001). Their findings show that the simulated face-to-face discussion environment had a positive impact on student grades and that students found the experience to be equal to, or better than, working alone. When compared to a control group taking the course live, these students reported that it was easier to generate arguments in this manner, that they learned more, and that they were more "able to think and analyze" the course materials.

More recent "distance education" systems have tried to take advantage of the developments in telecommunication technology (broadband) and Internet. Fortino and Nigro (2004) report on the use of an on-line (Internet) learning paradigm, Collaborative Learning on-Demand

(CLoD), for the purpose of supporting synchronous (i.e., where geographically diverse viewers watch the videotaped lecture at the same time and participate, electronically, in a group discussion) DTVI. Another methodology uses an interactive webcasting environment to enhance interaction and collaboration (Talking in Class) during live webcast events (e.g., lectures) via audio-conferencing. Schick, et. al., (2004) describe the field experiments that are planned in an effort to evaluate if collaboration can be achieved in this manner.

Even though no definitive conclusions are currently available, there is ongoing research on the effectiveness of many different methods of delivering CLoD, the methodology continues to gain acceptance in mainstream training efforts. According to education analysts, *online tutoring*, which began in the late 1990s, has grown in the past five years as communication technology improved and became more affordable. Tim Wiley, a senior analyst at Eduventures, an education and research consulting firm in Boston, estimates that online tutoring accounts for about 6 percent of the $2.2 billion U.S. private tutoring market, which reached 1.9 million K-12 students last school year. Following quote from a recent newspaper article, "Via Internet phone, Sumaiya, 27, who works for a Bangalore company, coached the 11-year-old through drills and word problems in her clipped British Indian accent one recent evening. The equations she drew in red materialized on Kevin's screen in Alameda, and he wrote back in blue. ….." explains how this system works. (Hua, 2006)

USING DISTANCE EDUCATION SYSTEMS FOR TRAINING

As we have discussed earlier, three major developments have created the circumstances and environments which are impacting and changing the way organizations deal with manpower and skills needed to support various organizational processes. They are our long term experiences and effective use of "distance education" locally and globally, the continued and accelerated "globalization" efforts of organizations in manufacturing and services, and the limitations of local "labor availability and access" and the impact it has on ongoing globalization.

Over the past two decades, "distance education systems" have evolved and been effectively used in different types of organizations

(educational and non-educational) to not only provide professional degrees (e.g. MBA) but also for training. Secondly, the "globalization" efforts of large organizations have accelerated (among the many reasons is the development of communication technologies that have eroded the time and place limitations and boundaries) and have moved from low-skill based manufacturing processes to skill-based processes. Finally, the countries (e.g. China and India) which have been the primary recipient of globalization have started loosing some of their competitive attractiveness because of skilled labor shortages and its impact on wage labor cost, which had been one of the major foundations of their advantage. Furthermore, other countries which may also be possible recipients either do not have the necessary infrastructure or the political climates. The countries which do not suffer from these limitations have also been experiencing the same employee limitations as China and India.

However, the continued developments in communication technologies (e.g. access to Internet, availability of broadband access, and increasing penetration of computers globally in homes, etc.) have created an opportunity for both the professional educators and trainers who can provide the service and the organizations that want to continue globalization of their skill based processes. This urgent need to train local labor and to be able to do it effectively and cost efficiently will require large organizations to utilize distance education systems and technologies in an increasing fashion. In fact, Institute of Management & Administration (2002) have found out that 60% of U.S. companies use some form of e-learning to deliver training to their employees, customers, and/or suppliers. Almost 2/3 of those companies that do so have done substantial customization of off-the-shelf training packages in order to more effectively deliver the desired training. These companies have used "distance training" because it is cost effective (i.e., reduced travel time, reduced time away from the workplace, lower direct costs of instruction), it is convenient and flexible (easy to customize and deliver without time and location limitations), and it has been found to be as effective as live instruction.

The organizations which have used and continue to use various distance education models to deliver training to their employees cover a broad range of spectrum, from service to manufacturing, and from for-profit to not-for-profit. Among the notable not-for-profits are the American Red Cross, North Carolina Centers for Public Health, and

Drug Information Association. The American Red Cross utilizes video-based, on-line training programs in first aid, CPR, automated external defibrillation (AED), and emergency cardiovascular care (EEC) training to employees and volunteers throughout the U.S. (Newswire, 2006) and the North Carolina Center for Public Health Preparedness uses online training modules for public health professionals and emergency response teams. (Horney, MacDonald, and Alexander 2005) The Drug Information Association has web-based modules which keep physicians, scientists, executives, and medical professionals worldwide up-to-date on the latest products and changes in regulatory environments. (McLaughlin 2003)

The for-profit organizations have also joined the ranks of distance education and online training. Among them are Fifth Third Bank, Arzel Zoning (an environmental company), and SimuFlite (an aviation company). The Fifth Third Bank utilizes e-learning modules to train the bank's 21,000 employees across four lines of business (Nelson, 2003) and   Arzel Zoning, using a broadcasting company (HVACChannel.tv), to train their customers' employees to sell, install, and service their environmental zoning systems. (Siegel, 2003) More recent examples are CAE's (a Canadian company) development and use of SimuFlite to provide individualized on-line training to pilots (Raisinghani, *et. al*., (2005) and IKEA's management education series which they make available to their employees globally and deliver using a "web-based system" to develop leadership skills. (Weinstein 2006)

ORGANIZATIONAL CHALLENGES IN E-TRAINING

Software companies and training support companies continue to develop products which are intended to help organizations produce engaging e-training content and make it easy for corporations to take live or pre-recorded video and easily synchronize it with existing PowerPoint slides, HTML pages, still images, and more to create dynamic rich-media presentations. The continued main objectives of these products are to take advantage of evolving technologies and enable trainees to view the e-training content at their convenience (via the Web, Intranet, or CD/DVD), in various locations, and with more interactive and engaging rich-media content (which will stimulate learning). Never the less, organizations trying to use "*e-training*" or "*training at a distance*" methodologies still face significant challenges.

These challenges come from issues related to "e-training readiness" which is based on *technology*, and *culture*, and measuring the return from such investments which is based on a *cost vs. benefit analysis* (ROI) of such systems and methodologies.

Technical Challenges

Recent years have witnessed and explosion of access to and usage of Internet all over the world. For example, of the 713 million June 2006 online users, 21% are from the U.S.; 11% from China; 7% from Japan; and 2.5% from India. (Burns, 2006) The overall worldwide Internet population has increased from 934 million in 2004 to 1.08 billion in 2005 and projected to be 1.8billion by 2010. (Computer Industry Almanac, 2006) The technology has become so pervasive and available all over the world that, a recent email from a Tibetan boy to a physics professor at UC Berkeley states "all day I spent watching physics lectures, wonderful lectures……." (DelVecchio, 2006) What this Tibetan boy was referring to was his ability to watch a physics class lecture by a professor in California, being broadcasted over the Internet using Google Video, and being watched by students in 35 states and 43 countries, including Tibet.

However, even though technical capabilities to provide *e-training* or *training at a distance* have significantly improved and is becoming readily available, the technical knowledge (e-training readiness) needed for e-learning may not be as pervasive. The concept of "e-training readiness" includes a basic knowledge of the components and operations of the technical system being used to deliver the e-learning as well as acceptance of technology as a medium of delivery, both by the trainers and the recipients. Even though technical knowledge of e-training systems is important, the foundation of "technical readiness for e-learning" is a positive feeling toward the use of technology as a delivery system for learning; in other words, a lack of technophobia. Because of demographic and sociological factors, unfortunately, technophobia still exists in many organizations, as well as educational institutions. The main source of this "technophobia" is the significant age-based difference in acceptance and use of technology. Technophobia exhibits itself in many ways among the older populations (who generally decide on the types of training programs, and develop and deliver these programs), as well as in a majority of the overall populations of the developing countries and less educated domestic

employees (who are the intended recipients of these training programs). Unless the organization can somehow overcome this "technophobia", its efforts to develop and implement e-training systems will be greatly hampered, impeded and will negate all the possible cost benefits associated with such systems.

Cultural and Behavioral Challenges

E-training, as all other distance education programs, assumes the participant to have certain personal and culturally based characteristics. These characteristics create the basis and foundation of a person's readiness for self-directed learning and might be missing from some of the cultures where the e-training is scheduled for use. These characteristics can be grouped as "ability in and openness to self-directed learning", a "strong desire to learn and change", and "perceived benefits from such an activity".

Cultural and behavioral e-training readiness is the degree to which the trainee has initiative, can accept independence, and has persistence. E-training best works with individuals who accept responsibility for their own learning and view problems (technological and material based) as challenges, not obstacles, and who are capable of self-discipline and have a high degree of curiosity. Furthermore, participants of e-training programs have to have a strong desire to learn or change, have basic study skills, and organize and manage their time. Individuals who participate in e-training have to be able to set an appropriate pace for learning, able to develop a plan for completing work, have to enjoy learning, and have to be goal-oriented. These are the characteristics which may be missing from the trainees who may be the primary focus of e-training programs and who generally occupy the lower levels in an organization. In countries where conformity is valued, defined as collectivist cultures by Hofstede (Hofstede, 1991), where face-to-face contact is valued (Davies and Lsung, 1995), and where educational system is more focused on instructor directed activities (e.g. lectures vs. student activity), this type of training (self-directed) requires a major change in the educational mentality of the participants (trainees) and may significantly impede the effectiveness of such methodology. Furthermore, even though studies which address the concept of "method of instruction vs. the preferred learning method for the trainees" and test its validity do not present uniform findings (Mainemelis, Boyatzis, and Kolb, 2002; Chen and Shaw, 2004), they raise another

culturally and individually based challenge which could further complicate the process and impede the effectiveness of technology based off-site organizational training.

At higher levels of the organizations (managerial trainees), cultural attitudes present different challenges to e-training. The training at these levels require different types of training, one to compensate for the educational (university level) shortcomings of potential foreign managerial candidates to develop their technical skills and, secondly, to train them in the behaviorally and culturally based complexities of working in a Western company. Unfortunately, this two pronged approach, even though may not be impacted by the individually based behavioral limitations discussed above, creates a major challenge in "teaching behavioral and cultural complexities of another country", which require exposure to culturally based behaviors and is not a topic that can be easily taught with e-training technologies. This level of trainees also suffer from perceptions of culturally based organizational limitations in Western based multinational organizations. They often sense or believe that top positions in these Western based multinational companies will always be held by European of U.S. managers. As a result, these managerial trainees either fully capture the intended benefits of institutional training and use these skills to make themselves more marketable to local companies (increased turnover for the company providing e-training), or participate in the training just enough to get by and meet the minimum organizational expectations (less than fully developed skills and associated benefits for the organization). In either case, the benefits expected by the company are not realized and have implications for the ROI (return on investment) from organizational training.

Return on Investment (ROI) Challenges

As with any investment (continued education and training of employees by the organization is an investment) the companies have to be careful in making the appropriate level of investment and selecting the most effective delivery system to provide trainees the facts and techniques they need to learn. Some researchers have tried to develop methodologies to identify and measure the effectiveness (benefits) of organizational training, for the organization. Galloway (2005) suggests that we address this issue by evaluating the "process" (were the correct

tasks performed?), "sequence" (were they performed in the correct order?), "results" (were the correct results attained?), and "time" (were the results attained with the time constraints?). Others (Raisinghani, *et. al.*, 2005) have tried to assess and evaluate the training efforts on the basis of their perceived usefulness, ease of use, compatibility, peer influence, efficacy and technology facilitating conditions. Yet others (Horney, et. al., 2005) have relied on participant survey responses as "training was useful", "module made me feel better equipped to do by job", "I will recommend the training to a friend", and "desired additional training in specific fields".

However, if we need to develop a mechanism to truly measure training ROI, we need to identify and measure the tangible costs and tangible benefits associated with this investment on appropriate job related behaviors, and identify the specific changes and improvements in the cost, quality, and quantity of the organizational tasks. We have to measure the value attributed to the trainees' applications of the newly acquired skills and competencies as compared to the organizational costs associated with providing this training. In determining and measuring some of these benefits and competencies, companies can use cost savings, output increases, time savings, quality improvements, increases in customer satisfaction or employee satisfaction, customer retention, and improvements in response time to customers. Among the costs associated with delivering the training programs are instructor fees (external vendor), instructor travel expenses, materials and supplies, meals and incidentals, participants travel expenses, and costs of organizational time (cost of lost organizational benefit during training). Unfortunately, no training ROI model acceptable to experts in the financial field currently exists.

CONCLUSIONS AND RECOMMENDATIONS

Previous research on "*distance education*" clearly identifies and demonstrates the benefit of using a "tutor" in increasing the effectiveness of "*education and training at a distance*". On the other hand, the largest cost associated with training is human component, the total cost of the trainer and the trainees to the organization. Therefore, development of efficient and effective e-training systems which can minimize costs (minimizing some of the human element costs), without any decrease in benefits (utilizing the tutor concept) should be one of the major goals in developing on-site or distance training programs.

Therefore, the basic question to be addressed by the organizations is whether technology can be used to somehow "create" a replacement for the tutor, in other words, can technology heavy "e-training" systems provide the same organizational benefits as the currently used people heavy organizational training programs?

The much larger question is, given the continued globalization efforts of companies in far-away and different environments, can technology be used to take the role of a "tutor" while companies try to provide "distance training" which is organizationally uniform (consistent and supportive of other organizational processes and tasks), flexible (customizable to local labor characteristics), and effective (so that tasks performed are within company quality and quantity expectations) in its outcomes? The answer to this broader question requires a significant collaboration between HR departments, educational/training experts, and technologists. Current distance education programs were developed, modified, and refined over time with extensive collaboration between educators and technologists. It is time for the HR departments to take the leadership on e-training, modify and fine tune the latest distance education technologies and methods, and develop and utilize efficient and effective e-training systems to minimize the limiting impacts of skilled labor shortages in developing countries.

Finally, there has to be more reliable and verifiable effectiveness measures for the investments companies make on education and training of their domestic as well as foreign employees. As we discussed earlier, currently there are no models which use verifiable measures to determine whether an organization's investment in training pays off or not; i.e. training's return on investment (training ROI). Unfortunately, since costs of training (investment in technology, cost of trainer, cost of materials, etc.) are generally borne and can be calculated within a short time period, the total impact of the outcomes (sustainable improvements in employee skill sets and their impact over time) has a much longer time span. This disparity in time horizons is the biggest challenge in developing accurate and reliable measures for "training ROI". However, as researchers, we should continue our attempts to develop and test financially sound models. Hopefully, once developed and tested, the organizations will use these models to look at training as a capital investment, demand positive returns, and employ these models when new training programs are being proposed and developed.

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